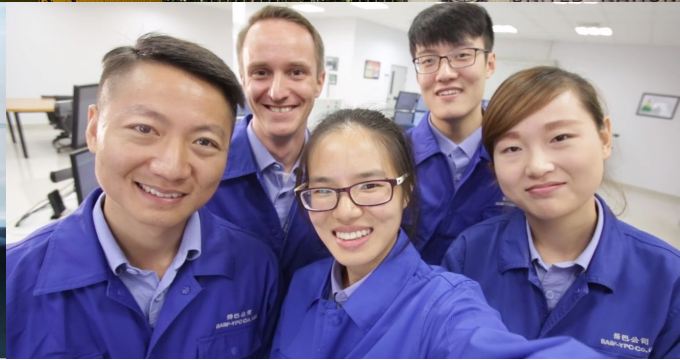




Role of Chemical Industry in decarbonization and fostering global PCF standardization

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June 21st, 2023



BASF commitments to reaching the Paris Climate Agreement

2030

25%
CO₂ emissions
reduction
(compared with 2018)¹

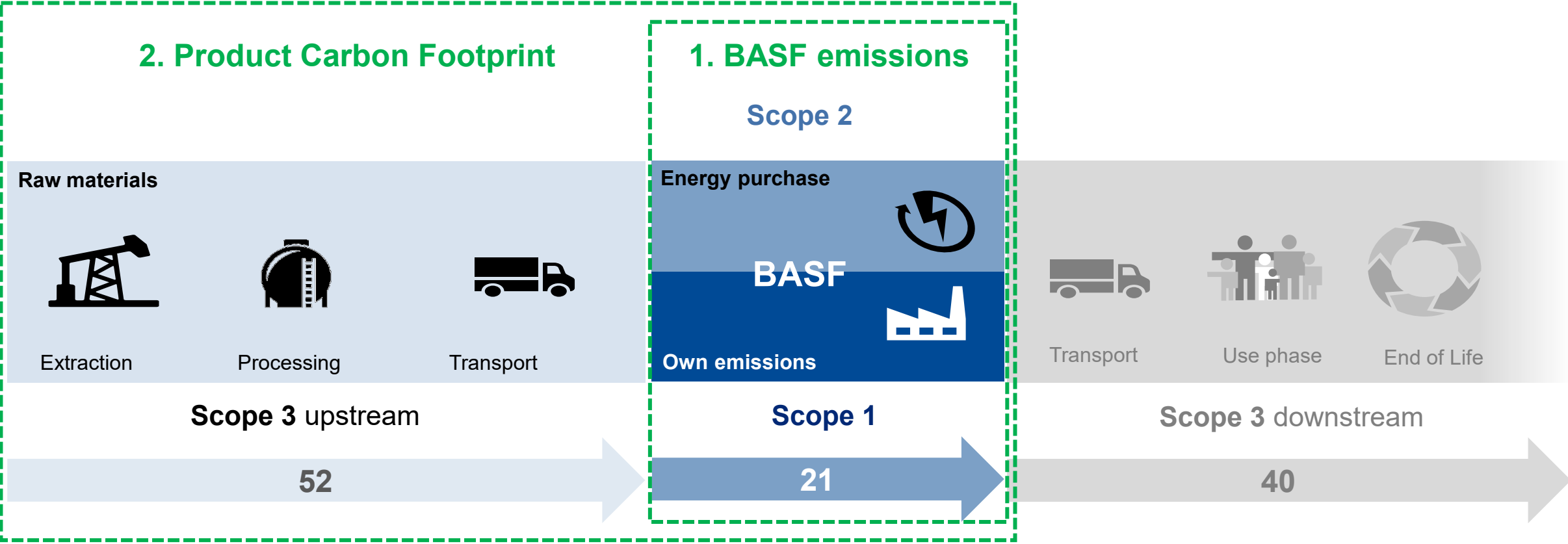
2050

net zero
CO₂ emissions¹

¹ Scope 1 and Scope 2: 2030 target compared with 1990: 60% CO₂ reduction

We assume responsibility along the entire value chain with two perspectives on carbon reduction

Greenhouse gas emissions along the BASF value chain in 2021*
 (in million metric tons of CO₂ equivalents)

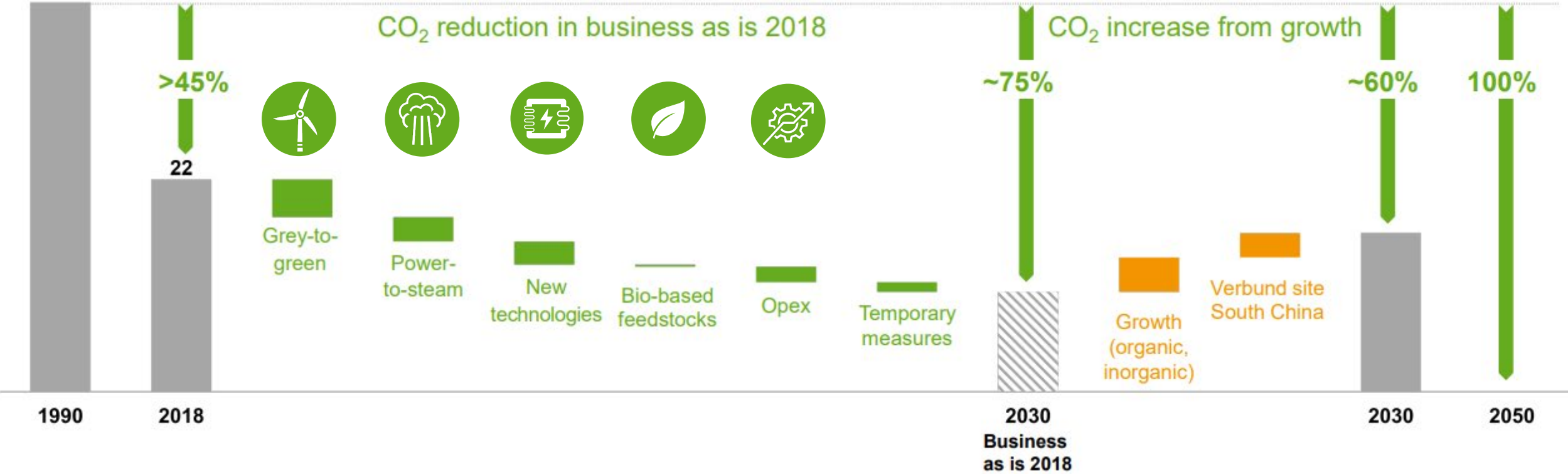


Scope 1: direct emissions from owned or controlled sources
 Scope 2 : indirect emissions from the generation of purchased energy
 3 Scope 3: indirect emissions that occur in the value chain (not included in scope 2)

BASF path to reduce emissions from 1990 to 2050

Comprehensive carbon management with five levers to reduce GHG emissions

BASF greenhouse gas emissions (Scope 1 and Scope 2) 2018–2030
 Million metric tons



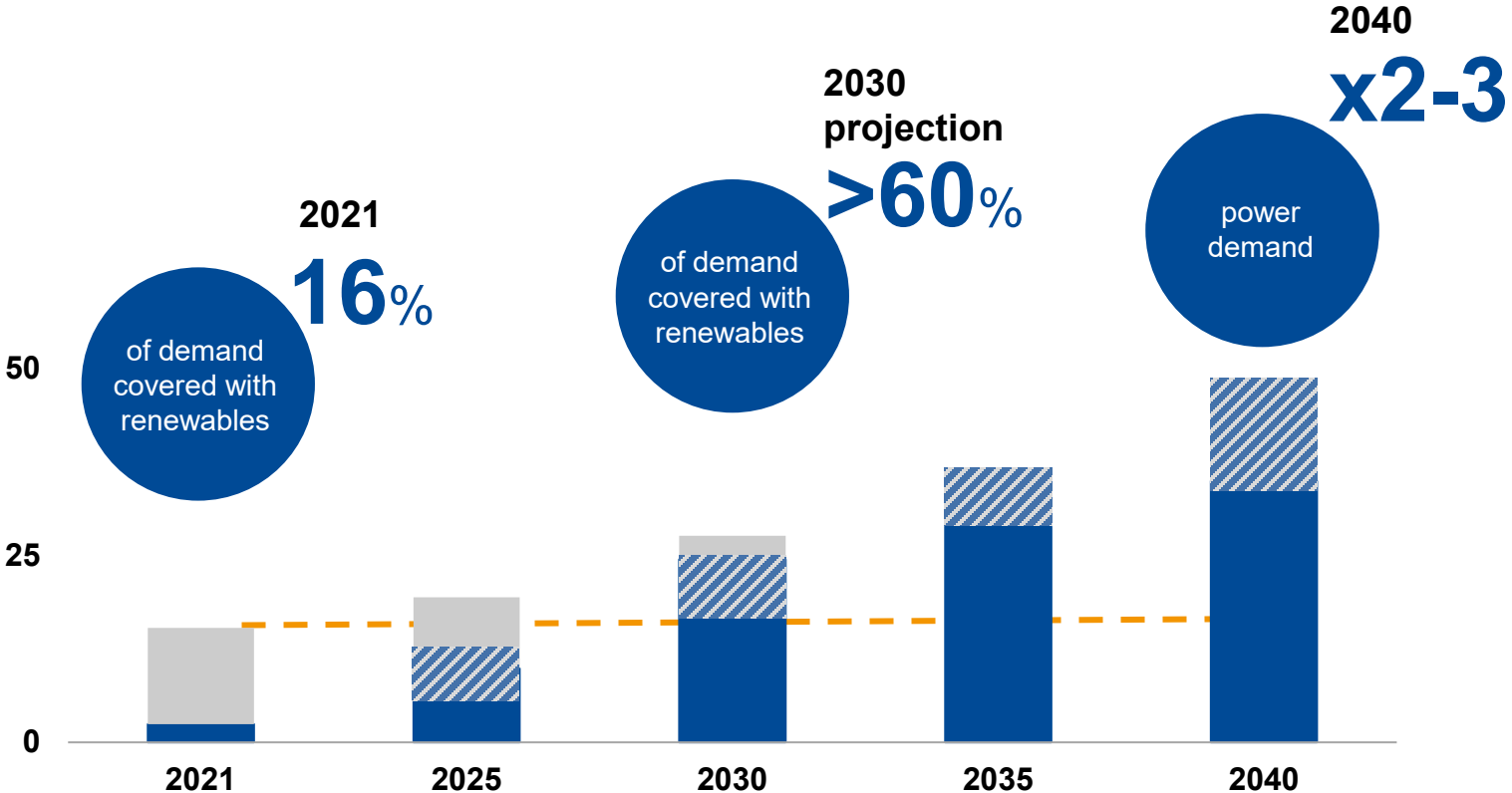
As of 2022, BASF reduced 16% CO₂ emission compared to year 2018 (target -25% by 2030)

Switching our power to renewable energy will be the main driver of emission reduction until 2025



BASF global power demand and renewable supply projection

Terawatt hours



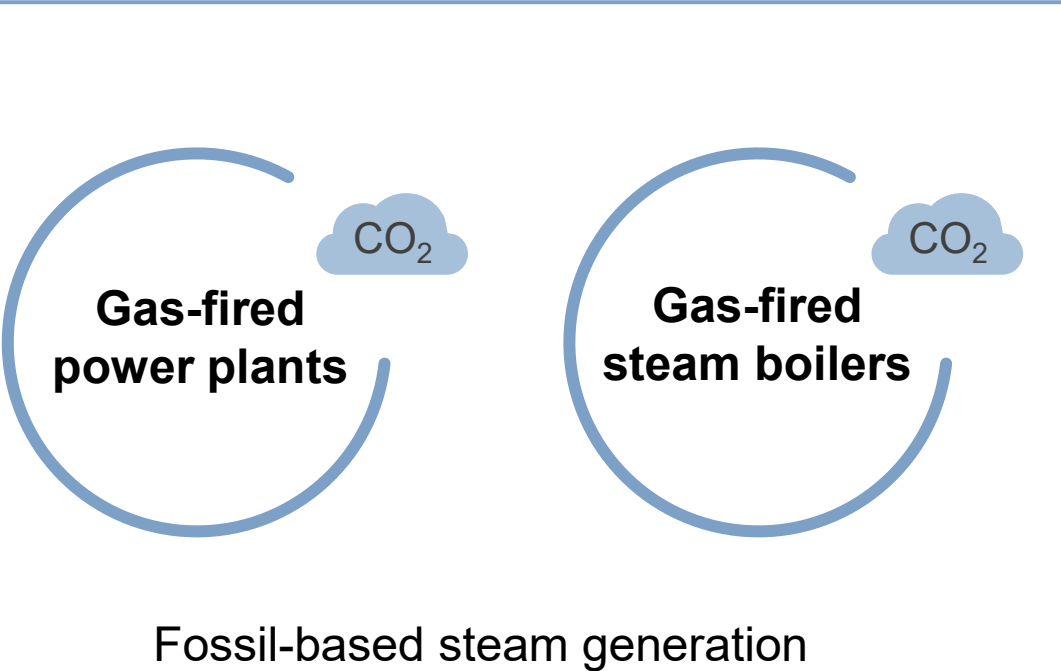
- BASF strives for **100% of power demand 2021 to be green by 2030**
- BASF **power consumption** expected to **increase strongly** due to electrification on our journey to net zero

Grey energy Green energy Additional need for green energy for electrification, depending on availability

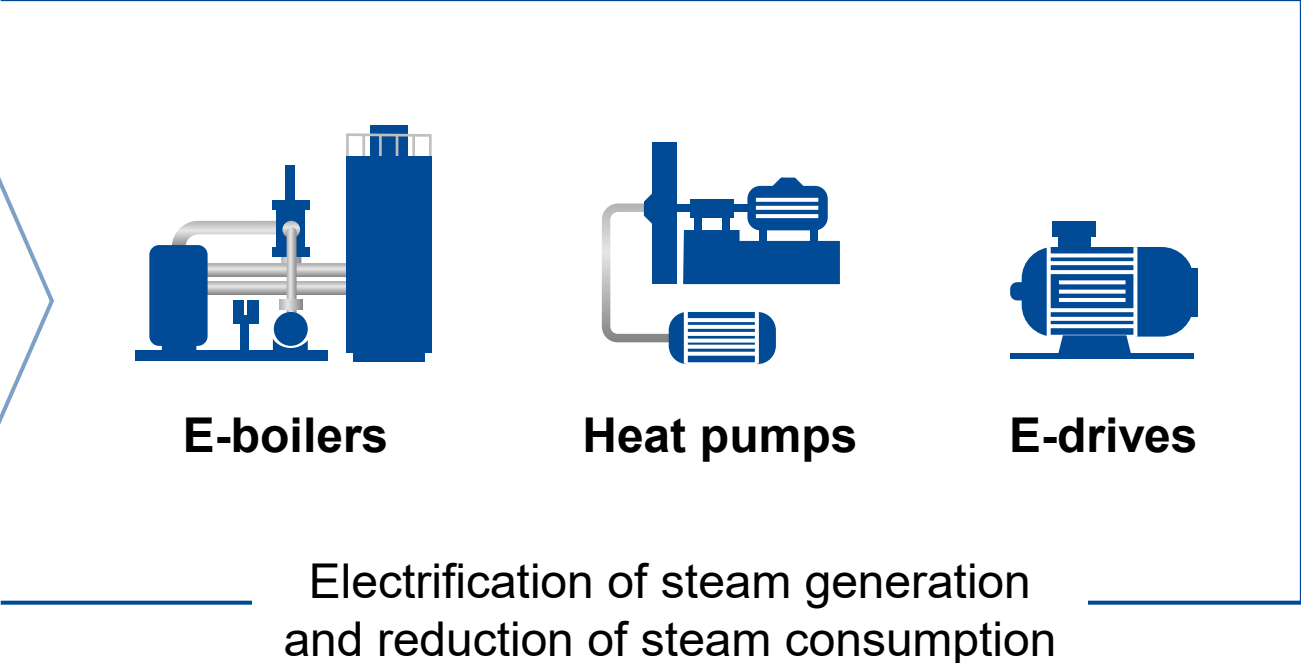
High potential from changing to power-to-steam allows decoupling from electricity supply



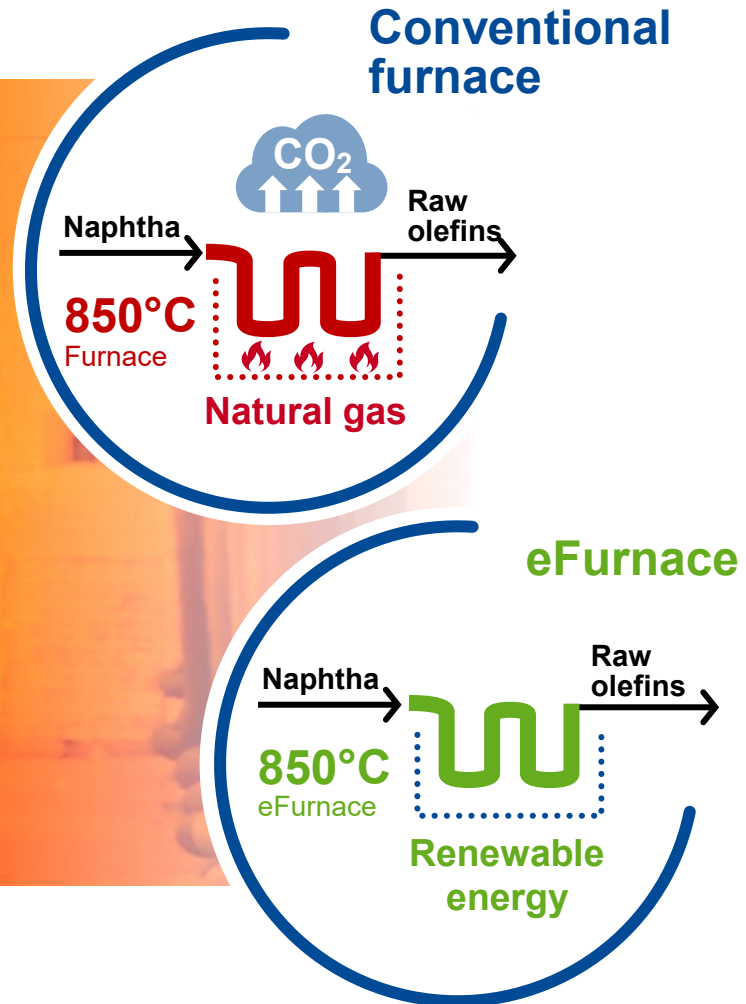
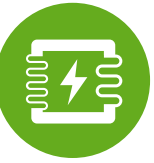
Current situation



Future situation



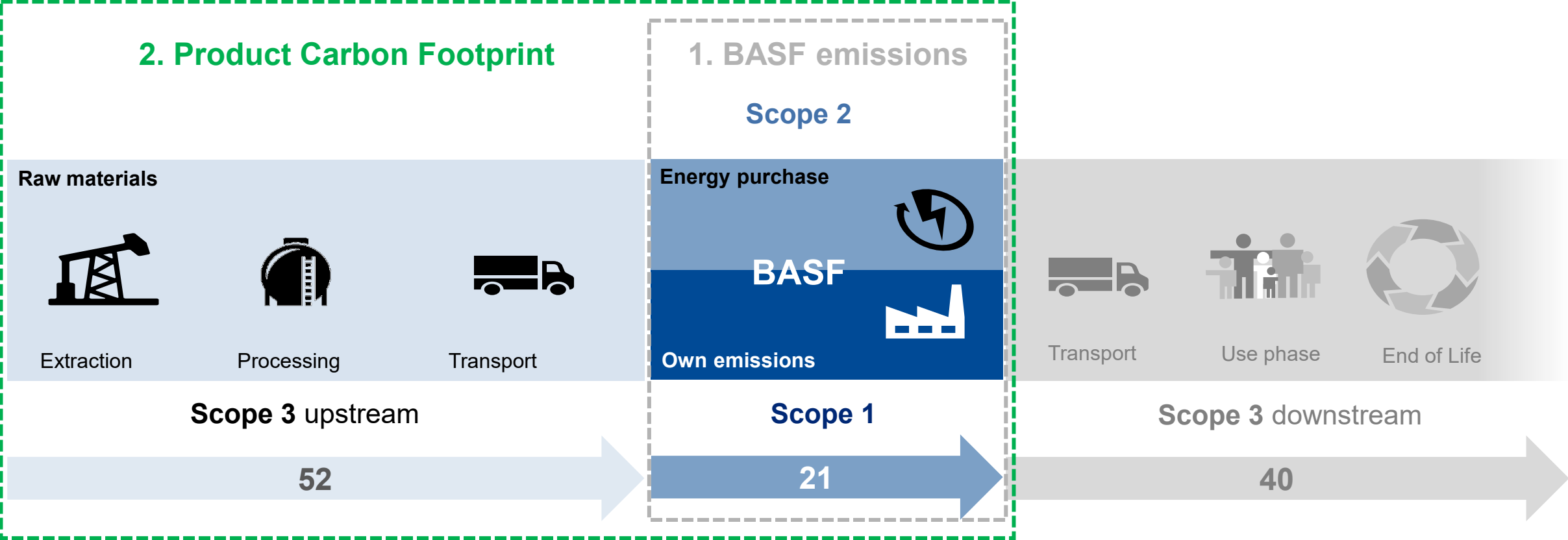
Preparations for the world's first electrically heated steam cracker furnace is on track



- **Steam crackers** play a central role in the production of basic chemicals.
- High temperatures needed for cracking process are normally achieved by burning **fossil fuels**.
- Fundamentally **new heating concepts (eFurnace)** and the use of **renewable energy**

We assume responsibility along the entire value chain with two perspectives on carbon reduction

Greenhouse gas emissions along the BASF value chain in 2021*
(in million metric tons of CO₂ equivalents)

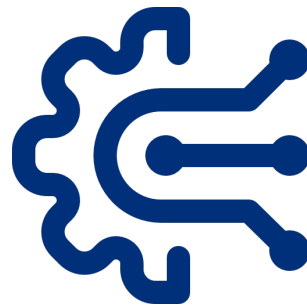


Scope 1: direct emissions from owned or controlled sources
 Scope 2 : indirect emissions from the generation of purchased energy
 Scope 3: indirect emissions that occur in the value chain (not included in scope 2)

3 key elements to execute product-level carbon accounting



*Practice-oriented carbon accounting **standards** to ensure PCF comparability*

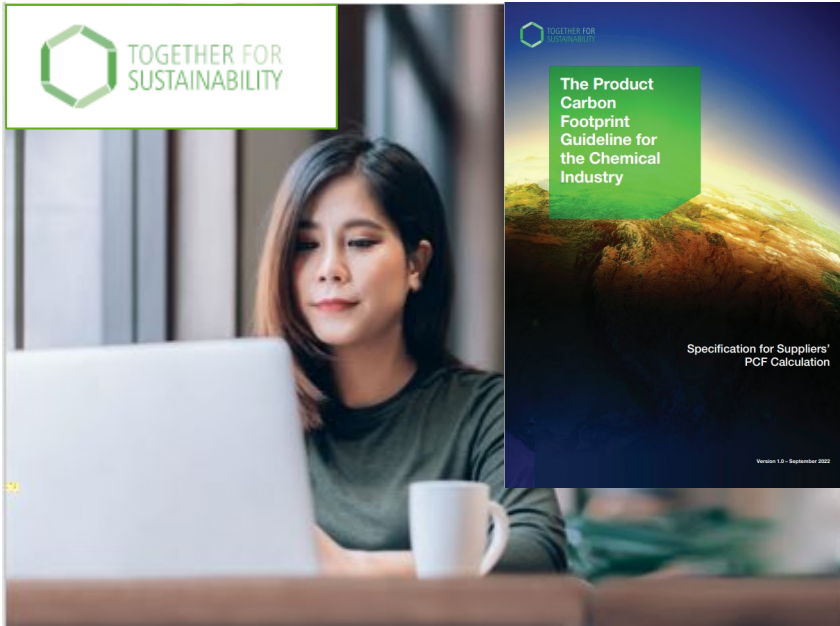


*Carbon accounting **tools** to generate accurate & certifiable PCF data at scale*



***Data exchange platforms** to enhance PCF transparency for Scope 3*

With Together for Sustainability, the chemical industry has joined forces to establish a global sectoral guidance & enhance comparability of PCF



First-of-its-kind, industry-specific guidance on calculating chemical PCFs.

Empowers companies to produce **higher quality carbon footprint data**.

Allows **comparison of chemical PCFs** across companies.

Tailored to meet **unique challenges** when calculating chemical PCFs.

Compliant with ISO and GHG Protocol accounting standards.

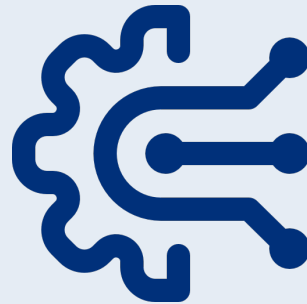
Open source, “drop-in” solution available to other industries using chemical material.



3 key elements to execute product-level carbon accounting



*Practice-oriented carbon accounting **standards** to ensure PCF comparability*



*Carbon accounting **tools** to generate accurate & certifiable PCF data at scale*



***Data exchange platforms** to enhance PCF transparency for Scope 3*

BASF has developed a digital carbon accounting solution to determine PCFs at scale



LCA methodology aligned¹ with **ISO, GHG Protocol Product Standard**, as well as the **TfS PCF Guideline**



Use of **primary data**¹ instead of industry averages and standard technology benchmarks



Automated LCA calculations to calculate PCF in an **efficient** and **consistent** fashion

Strategic CO₂ Transparency Tool (SCOTT)



Calculate PCF quickly and cost-efficiently



ISO-compliant methodology



Enable simulations for portfolio steering



Enable carbon-related marketing claims



CEPIC
Resp. Care Award



VCI
Resp. Care Award





Peter-Horvat-Stiftung
Green-Controlling-Prize

¹ primary data for SCOPE 1 & 2; primary data for SCOPE 3 upstream if available for raw materials; if not, fall back to secondary data

With SCOTT, BASF can now efficiently assess and steer complex product portfolios from a carbon emission perspective

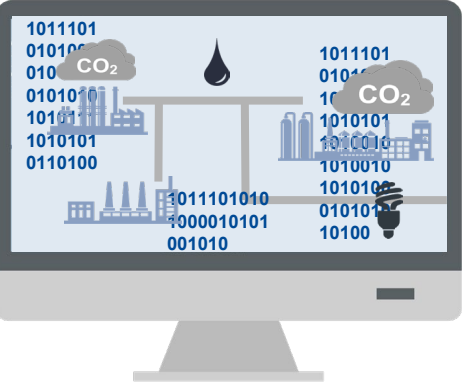
20,000
Raw materials
Scope 3

10 TWh/a
Energy
Scope 2



700
Production plants
Scope 1

SCOTT



CO₂



Product Carbon
Footprints of
~45,000
Sales Products



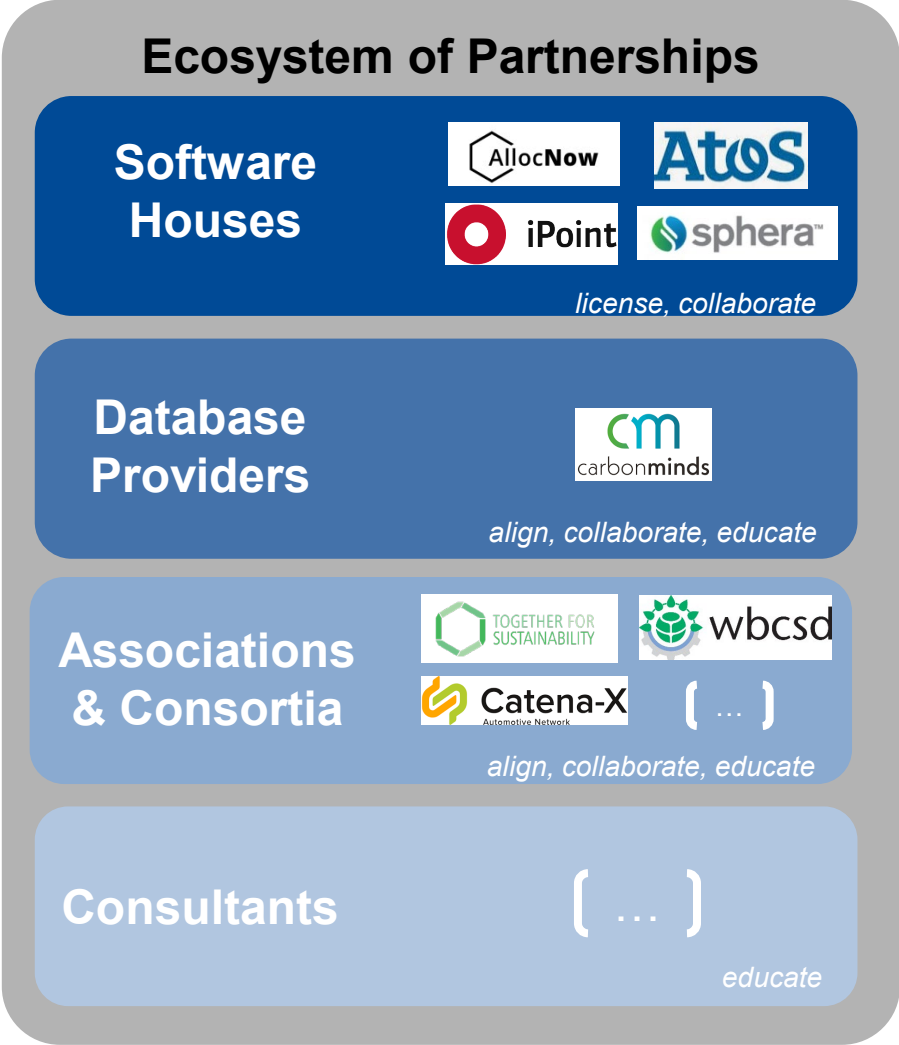
In less than 1h



BASF has brought SCOTT into the market via an ecosystem of partners to foster a PCF standard accounting and boost primary data availability



SCOTT



Manufacturing Co.s with focus on Chemical & Process industry

- ✓ Accelerate carbon steering
- ✓ Adopt proven tool
- ✓ Leverage a common std
- ✓ Unparalleled PCF transparency

Added Value



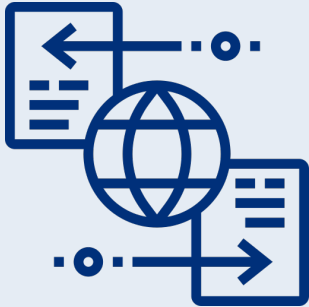
3 key elements to execute product-level carbon accounting



*Practice-oriented carbon accounting **standards** to ensure PCF comparability*

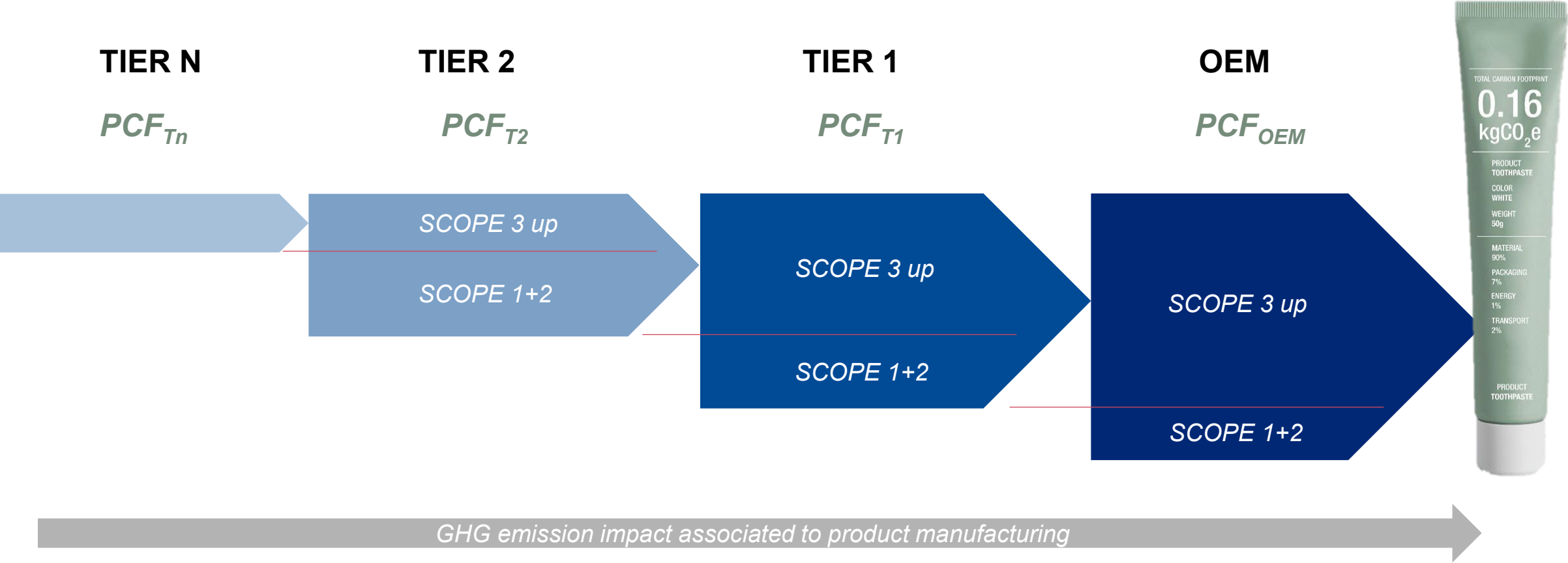


*Carbon accounting **tools** to generate accurate & certifiable PCF data at scale*

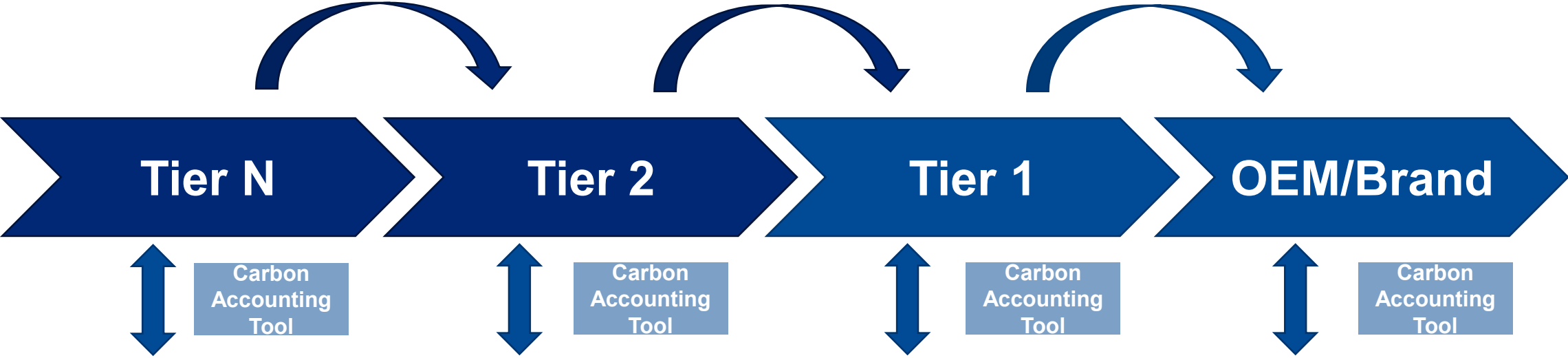


***Data exchange platforms** to enhance PCF transparency for Scope 3*

PCF determination of a final product requires availability of data owned by actors along global value chains



TfS is partnering with Siemens to pilot a digital platform for standardized & trusted exchange of PCF data along chemical value chains



 Data requests and data sharing via common platform(s) **SIEMENS**

- Data collection is based on a common standard and data sharing platform to support the industry
- The owner of the PCF data must keep control over who gets to see their data
- Shared verification / auditing mechanisms

We tackle scope 3 upstream emissions with circular feedstocks

Recycling-based feedstock

Chemical Recycling for “hard to recycle plastic waste”



Renewable feedstock

Biomass Balance portfolio replacing fossil

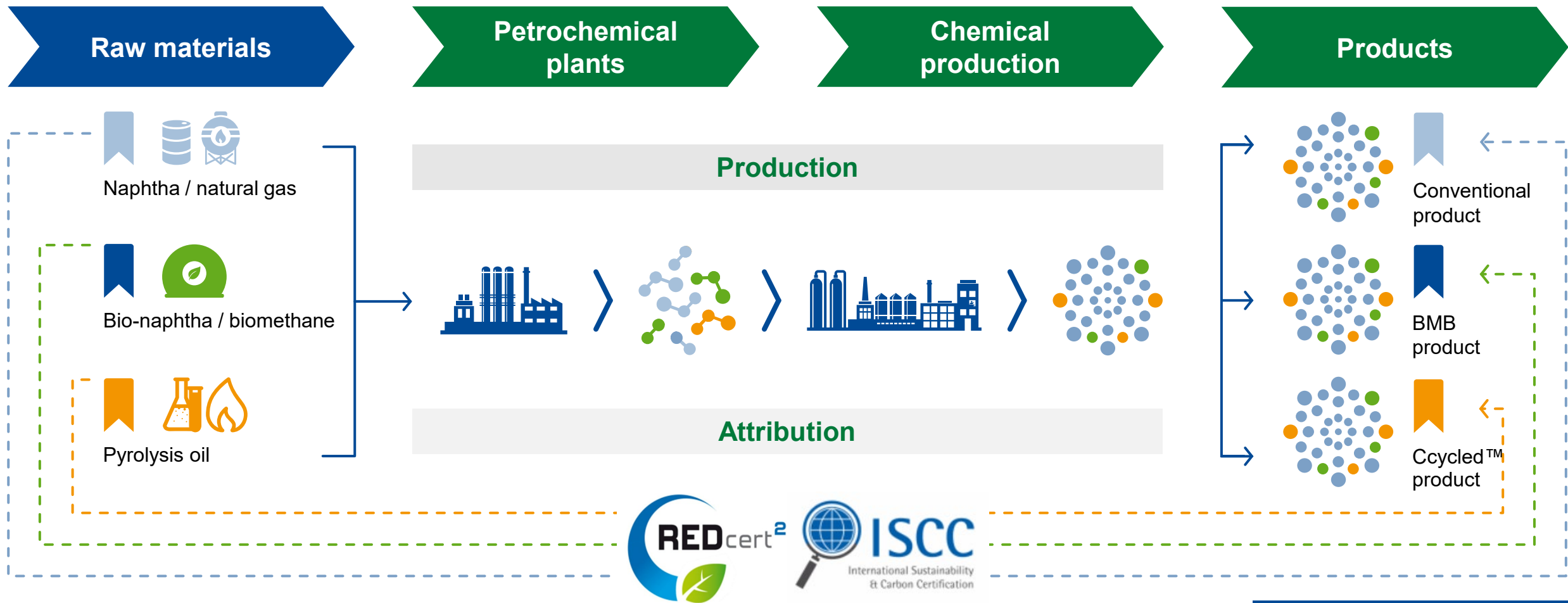


Dedicated bio-based portfolio



→ We can manufacture the same products in a more sustainable way

The alternative feedstock is attributed through the mass balance approach (credit method)



Third-party certification

Example of PCF – Ultramid Biomass Balance

Value added solution to meet sustainability trend in the textile industry

 Saves fossil resources



 Reduces greenhouse gas emissions

 Independently certified by TÜV SÜD

 No compromise on performance

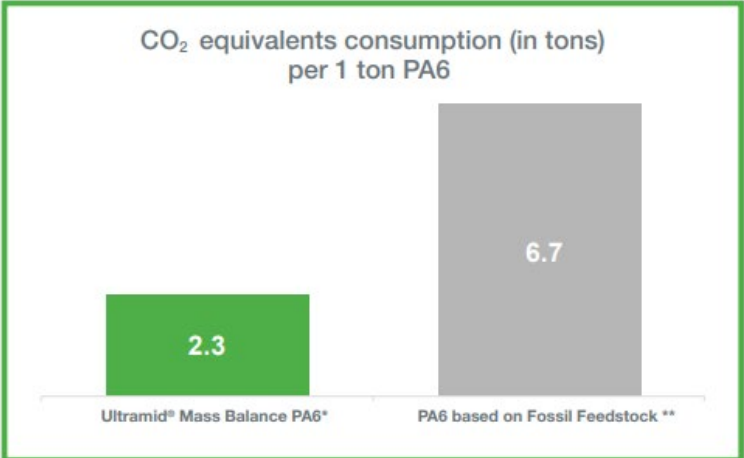
 Identical product derived from biomass

**-65%
saved**

Sustainably produced feedstock¹

- Sustainable use of land
- Protection of natural biospheres
- Social sustainability

¹ In accordance with International Sustainability & Carbon Certification (ISCC) and European Union Renewable Energy Directive's (RED) requirements.



* Based on LCA report for Ultramid® Mass Balance Polyamide 6
** According to Plastics Europe

We are on the road to the next level of transformation TOGETHER



Mindset shift to circular models and scientific discussions



Cross value chain collaboration for solutions and standards



Support global and national certifications and regulations



National open loop setup and acceptance of mass balance



Global EPR schemes and CO2 pricing mechanisms



Infrastructure and access to renewable electr. & waste streams



We create chemistry